B11 corrected

36. (New) The printing machine of claim 19 including a cold air temperature control device for controlling the temperature of the printing surface.

37. (New) The printing machine of claim 36 in which said temperature control device is operable from within the first cylinder.

REMARKS

The specification and claims have been amended herein to improve their form for U.S. examination.

Respectfully submitted,

Dennis R. Schlemmer, Reg. No. 24,703
One of the Attorneys for Applicant(s)
LEYDIG, VOIT & MAYER, LTD.
Two Prudential Plaza, Suite 4900
180 North Stetson
Chicago, Illinois 60601-6780
(312) 616-5600 (telephone)
(312) 616-5700 (facsimile)

Date: May 2, 2002

CERTIFICATE OF MAILING

I hereby certify that this FURTHER PRELIMINARY AMENDMENT (along with any documents referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, Washington, D.C. 20231.

Date: May 2, 2002 _____

PATENT
Attorney Docket No. 215214

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Jurgen Scholzig
Ulrich Jung
Ruth Kremer
Thomas Walther

Art Unit: Unassigned

Application No. 10/031,157

Examiner: Unassigned

Filed: January 14, 2002

For: SHEET-GUIDING DEVICE FOR A PRINTING MACHINE

AMENDMENTS TO SPECIFICATION, CLAIMS, AND ABSTRACT MADE VIA FURTHER PRELIMINARY AMENDMENT

IN THE SPECIFICATION:

Amendments to the paragraphs beginning at page 2, line 2:

The invention relates to a sheet-guiding device for a printing machine and more particularly, to a sheet-guiding device adopted for assisting sheet control [according to the precharacterizing clause of the main claim and serves to assist sheet guidance] in the area of a printing or varnishing nip.

A conventional sheet-guiding device is disclosed, for example, by EP 0 306 682 A2. The device essentially comprises two blow strips to which blown air is applied and which are arranged upstream and downstream of the press nip formed between a blanket cylinder and a printing cylinder, over the cylinder width and parallel to the axis. The blow strip which is upstream in the conveying direction is arranged in [the gore-like] a space above the incoming sheet between the blanket cylinder and printing cylinder. The blown-air stream is directed onto the blanket cylinder, into the printing zone itself and onto the upper side of the sheet carried in the grip of the grippers on the printing cylinder. The downstream blow strip, arranged downstream of the printing zone in the conveying direction, produces a blown-air stream which is directed onto the upper side of the sheet carried on the printing cylinder and onto the blanket cylinder, counter to the conveying direction. The

[invention] reference primarily describes the sheet-guiding device during printing operation (print on position). Furthermore, in printing practice it is usual for the blown-air operation to be maintained when the blanket cylinder is thrown off (print off position), for example when checking the paper run or when a printing unit is not involved in the printing. The sheet printing material is then conveyed through the means of blown air (without contact with the inactive blanket cylinder).

Amendments to the paragraph beginning at page 3, line 19:

In the case of these pneumatically operated sheet-guiding devices, [the] a disadvantage is that given [a] the relatively high [grammage or specific elasticities] elasticity of the printing materials, such as for example in the case of board or sheet metal, the effectiveness of the sheet guidance is reduced. As a result of the relative movement with the blanket/plate cylinder stationary and the printing material being conveyed, the risk of smearing is increased, and as a result the print quality can be impaired.

Amendments to the paragraphs beginning at page 4, line 23 to page 5, line 11:

It is an object of the invention to provide [The invention is based on the object of providing] a sheet-guiding device in a printing machine which permits the uniform guidance of a printing material on a sheet-carrying cylinder, preferably a printing cylinder, in a printing/varnishing unit that is not involved in the printing/varnishing process, and ensures smear-free passage of the sheet printing material through a printing/varnishing nip formed by a blanket/plate cylinder and sheet-carrying cylinder.

[The object is achieved by the design features of the main claim. Developments emerge from the subclaims.]

In the case of in-line sheet-fed rotary printing machines with printing units for multi-colour printing, one or, more varnishing units can [also] be assigned to the printing units for in-line finishing. In this case, a varnishing unit can be compared with an offset printing unit, in that the blanket cylinder of the printing unit then corresponds, as is known, to the plate cylinder of the varnishing unit, which is functionally connected to an applicator roll and a varnish metering system. Here, a in

the varnishing unit.

Amendments to the paragraph beginning at page 5, line 37 to page 6, line 18:

Alternatively, a planographic printing plate for damping-solution-free offset printing, also called waterless offset printing or dry planographic printing, can be employed. A planographic printing plate of this type has, inter alia, a layer of silicone rubber and a light-sensitive photopolymer layer. In the case of preferred UV exposure under a positive, the layer of photopolymer experiences hardening and, in so doing, bonds with the layer of silicone rubber. The layer of silicone rubber hardened in this way on the printing plate repels ink or varnish. In a preferred embodiment [development], this planographic printing plate for damping-solution-free offset printing is constructed with a layer of silicone rubber over the entire area. Alternatively, layers of silicone rubber are arranged distributed zone by zone over the width of this planographic printing plate, preferably in the conveying direction of the sheet printing material.

Amendments to the paragraph beginning at page 7, line 6:

In a [development] further embodiment, inlays of a fluoropolymer or fluoropolymers can also be realized in the composite, for example in cracks, gaps or pores, in the abovementioned surface or surface layer of chromium or aluminium, including anodized aluminium.

Amendments to the paragraphs beginning at page 7, line 17, to page 8, line 13:

A blanket/plate cylinder which can be rotatably driven [in rotation] at machine speed and has a plate or film, for example a printing plate or printing film, with an ink/varnish-repellent coating, in a printing/varnishing unit that is not involved in the printing/varnishing process, can be moved into a print off position or a position with a gentle printing pressure in relation to the printing material - taking into account the thickness of the printing material. A sheet printing material fixed in the grip of grippers can then be conveyed through a printing/varnishing nip by means of a sheet-carrying cylinder with the already printed and/or varnished side [(assigned to] facing

the blanket/plate cylinder[])].

In this case, it is advantageous that, in order to implement the sheet guidance, the blanket/plate cylinder with plate or film and ink/varnish-repellent coating can be rotatably operated [in rotation]. In [this] such case, noticeably low frictional torques occur between the printed and/or varnished printing material transported on a rotating sheet-carrying cylinder, in particular printing cylinder, and an associated, rotating blanket/plate cylinder (with plate or film with ink/varnish-repellent coating) as the relative rotating movements are carried out, by which means the risk of smearing is reduced.

Moreover, it is advantageous that the splitting of ink/varnish can be reduced considerably by means of the ink/varnish-repellent coating of the plate or film fixed on the blanket/place cylinder[,] so that any impairment to the print quality can additionally be avoided.

Amendments to the paragraphs beginning at page 8, line 20 to page 10, line 13:

It is likewise advantageous that the sheet-guiding device can be employed irrespective of the [grammage or] modulus of elasticity of the sheet printing materials to be processed.

Blow pipes which can be operated pneumatically and are arranged upstream and downstream of the printing/varnishing nip, [or] and sheet guide elements arranged in the cylinder channel are not required.

In order to provide additional assistance to the sheet guidance, blowing devices can be arranged upstream and downstream of the printing/varnishing nip[,] and assist the transport of the printing materials on the sheet-carrying cylinder.

[Fig. 1 illustrates an] Referring now more particularly to the drawings, there is shown an illustrative in-line sheet-fed rotary printing machine. In this case, a number of printing units for multi-coloured printing, with sheet-carrying cylinders 1, for example printing cylinders, are lined up with one another and are connected to one another by transfer cylinders 17 or turning systems.

Fig. 1 shows a partial view of such a printing machine for in-line finishing. Shown here is only a last printing unit 14 having a plate cylinder 13, a blanket

cylinder 12 and a printing cylinder 1 as sheet-carrying cylinder. Assigned to the plate cylinder 13 is an inking unit and, if appropriate, a damping unit, which [will] need not be discussed in detail here.

Arranged downstream of the printing unit 14, in the conveying direction 5, is a first varnishing unit 15, which is formed by a plate cylinder 2, an applicator roll 3 and a metering system 4, for example a metering roll (two-roll unit) or a chamber-type doctor or at least a dip roll operating on the dip-roll principle. In this case, the [corresponding] metering system 4 can be employed optionally. The plate cylinder 2 is in turn assigned to the printing cylinder 1. Arranged downstream of the first varnishing unit 15 is a dryer device 20, for example an infrared (IR) dryer, assigned to an adjacent printing cylinder 1 or an adjacent transfer cylinder 17. In the conveying direction 5, the dryer device 20 is followed by a second varnishing unit 16 with plate cylinder 2, applicator roll 3 and metering system 4 which can be optionally [be] employed. The printing cylinders 1 and printing units 14, varnishing units 15, 16 and the dryer device 20 are connected to one another for sheet transport by means of transfer cylinders 17. The printing cylinders 1 and the transfer cylinders 17 are of double-size construction[, as referred] in relation to a single-size blanket cylinder 12 and a single-size plate cylinder 2[,] and have gripper systems 7, 8 arranged [distributed] symmetrically on the periphery.

Amendments to the paragraphs beginning at page 10, line 21, to page 12, line 15:

[In the present example, according to Fig. 2 the] The second varnishing unit 16, as depicted in Fig. 2, is shown [as] inactive, that is to say it is not involved in the varnishing process. In this case, the metering system 4 is formed by a chamber-type doctor with an associated engraved applicator roll 3. A plate 11 in this case [or film 11, here a printing plate 11, this can alternatively also be a printing film 11,] is fixed on the plate cylinder 2 of the varnishing unit 16, the said plate cylinder 2 having a cylinder channel 6. Alternatively, a printing film 11 could be used. The plate/film or printing plate/printing film 11 is provided with an ink/varnish-repellent surface, preferably a coating, and can preferably be fixed to the cylinder in the area of the cylinder channel 6. In one embodiment, the plate/film 11 is a printing plate/printing film with a layer of silicone

rubber on the surface. For instance, on the plate cylinder 2 there may be provided [is arranged], as plate/film 11, a planographic printing plate for damping-solution-free offset printing, with an ink/varnish-repellent layer of silicone rubber formed over the entire area. Alternatively, the plate/film 11 is constructed as relief printing plate.

The plate cylinder 2 can be moved by appropriate known means into a print off position, so that a clearance in the printing nip or varnishing nip 10 is formed between the printing cylinder 1 and plate cylinder 2. An already previously printed sheet [printing material] is led in the grip of grippers of the rotating printing cylinder 1 through the printing/varnishing nip 10 of the varnishing unit 16 that is not involved in the printing/varnishing process. At the same time, the plate cylinder 2 located in the print off position, together with the printing plate 11 or printing film 11, rotates in the conveying direction 5 at the machine speed, and the printing material is transported through the printing/varnishing nip 10 without smearing.

In a [development] operating mode, the plate cylinder 2 - taking into account the thickness of the printing material - can be set [into] to a position with a gentle printing pressure in relation to the printing material. [This means that] In this case there is only a defined, slight frictional contact between the printing plate 11 on the plate cylinder 2 and the printing material fixed on the printing cylinder 1. The already previously printed and/or varnished sheet [printing material] is led in the grip of grippers of the rotating printing cylinder 1 through the printing/varnishing nip 10 of the varnishing unit 16 that is not involved in the varnishing process. At the same time, the plate cylinder 2 located in the position of gentle printing pressure (with the printing plate/printing film 11) rotates in the conveying direction 5 at the machine speed, and the printing material is led through the printing/varnishing nip 10 without smearing but in contact with the printing plate/printing film 11.

In still a further embodiment, a plate or film 11 with an ink/varnish-repellent surface or surface layer can be brought into contact with a release agent. The release agent can be transferred - with the varnish supply interrupted - via the metering system 4, for example a chamber-type doctor with a feed and return line, and the applicator roll 3 to the plate or film 11 on the rotating plate cylinder 2[, the plate cylinder 2 rotating]. The release agent preferably contains at least silicone and/or water.

Amendments to the paragraphs beginning at page 12, line 28, to page 13, line 18:

The use of a release agent prevents any possible splitting back of the ink or varnish from the printed/varnished printing material onto the plate or film. In addition, the release agent counteracts any possible contamination of the plate/film as a result of the splitting-back of ink/varnish. Therefore, cleaning operations which are otherwise necessary can be reduced.

In a further embodiment, the plate or film 11 fixed on the plate cylinder 2 and having an ink/varnish-repellent surface can have its temperature controlled. In one embodiment, a temperature control device supplying cold air is [assigned] provided adjacent to the plate/film 11. The cold air is directed onto the plate/film 11 and forms a film of moisture, which acts as release agent, as condensation on [this] the plate/film 11. In a further embodiment, the plate cylinder 2 (or blanket cylinder 12) carrying the plate/film 11 can have its temperature controlled within the cylinder circumference.

The position of the plate cylinder 2, and alternatively of the blanket cylinder 12, with a defined printing pressure in relation to the printing material, or the print off position of blanket/plate cylinder, is not restricted to one of the embodiments of plate or film 11.

Amendments to the paragraph beginning at page 13, line 28:

[The solution according to] It will be appreciated that the invention is not restricted to a plate cylinder 2 or comparable blanket cylinder 12. Instead, the respective cylinder 2, 12 can be substituted by a roll with an ink/varnish-repellent surface that is not involved in the printing/varnishing process. The roll is then assigned to the sheet-carrying cylinder 1.

IN THE CLAIMS:

Cancel claims 1-18.

Add the following new claims 19-37:

19. (New) A printing machine comprising:
a plurality of printing units for applying a liquid medium to a side of printing material;
at least one of said printing units being non-operating so as not to be involved in a printing process during operation of the machine;
said at least one non-operating printing unit having a first cylinder and an associated sheet-carrying cylinder, said sheet-carrying cylinder having grippers for engaging and transferring a sheet through a nip defined between said first cylinder and said associated sheet-carrying cylinder, and said first cylinder having a liquid repellent surface and being rotatable at an operating speed of the printing machine with said associated sheet-carrying cylinder conveying printing material through said nip with a printed side of said printing material facing said first cylinder.

20. (New) The printing machine of claim 19 in which said first cylinder is a blanket cylinder having a varnish repellent surface.

21. (New) The printing machine of claim 19 in which said first cylinder is a plate cylinder having an ink repellent surface.

22. (New) The printing machine of claim 19 in which said printing surface is defined by a printing plate on said first cylinder.

23. (New) The printing machine of claim 19 in which said printing surface is defined by a film on said first cylinder.

24. (New) The printing machine of claim 19 in which said printing surface is defined by a layer of silicone rubber.

25. (New) The printing machine of claim 19 in which said printing surface is defined by a planographic printing plate operable for use in dampening-solution-free offset printing.

26. (New) The printing machine of claim 19 in which said printing surface is defined by a relief surfaced printing plate.

27. (New) The printing machine of claim 19 in which said first cylinder is electrically movable between a printing position and a removed non-printing position.

28. (New) The printing machine of claim 19 in which said first cylinder is positionable in relation to the sheet-carrying cylinder with a predetermined printing pressure.

29. (New) The printing machine of claim 19 in which said printing surface is defined by a composition that contains at least one of chromium, aluminium, or anodized aluminum.

30. (New) The printing machine of claim 19 in which said printing surface is defined by an organic or inorganic hybrid polymer on an aluminum substrate.

31. (New) The printing machine of claim 29 in which said printing surface has discontinuities in the form of cracks, gaps or pores which are filled with inlays of at least one fluoroplymer.

32. (New) The printing machine of claim 19 in which said printing surface is polished to a mirror finish.

33. (New) The printing machine of claim 19 including a metering system and applicator roll for applying a release agent to the printing surface.

34. (New) The printing machine of claim 19 including a spray device extending the axial length of said first cylinder for directing a release agent onto the printing surface.

35. (New) The printing machine of claim 19 including a device for controlling the temperature of the printing surface.

36. (New) The printing machine of claim 19 including a cold air temperature control device for controlling the temperature of the printing surface.

37. (New) The printing machine of claim 36 in which said temperature control device is operable from within the first cylinder.